



## ***Michigan Highway Safety Summit Handout***

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### **Indicators of Drug or Alcohol Abuse or Misuse:**

#### **Behavioral**

- Abnormal behavior
- Exaggerated behavior
- Boisterous or argumentative
- Withdrawn
- Avoidance
- Changing emotions & erratic behavior

#### **Speech**

- Slurred or slow speech
- Nonsensical patterns
- Confusion

#### **Physical**

- Breath or body odor
- Lack of coordination
- Uncoordinated & unsteady gait
- Unnecessary use of arms or supports for balance
- Sweating and/or dry mouth
- Change in appearance

#### **Performance**

- Inability to concentrate
- Fatigue & lack of motivation
- Slowed reactions
- Impaired driving ability

### **The physiologic factors predisposing to addiction**

Nearly every addictive drug targets the brain's reward system by flooding the circuit with the neurotransmitter, dopamine. Neurotransmitters are necessary to transfer impulses from one brain cell to another. The brain adapts to the overwhelming surges in dopamine by ultimately producing less dopamine and by reducing the number of dopamine receptors in the reward circuit. As a result, two important physiologic adaptations occur: (1) the addict's ability to enjoy the things that previously brought pleasure is impaired because of decreased dopamine, and (2) higher and higher doses of the abused drug are needed to achieve the same "high" that occurred when the drug was first used. This compels the addict to increase drug consumption to increase dopamine production leading to physiologic addiction with more and more intense cravings for the drug.

### **The effects of addiction on the brain**

Nearly all substances of abuse affect the activity of neurotransmitters that play an important role in connecting one brain cell to another. Interruption of this process may result in:

- Delayed maturation and development of the immature brain (brain development continues to about age 25 years)
- Cognitive impairment with learning problems and limited or decreasing IQ
- Behavioral disorders, including aggression, impulsive behavior, and a variety of mental health problems

## ALCOHOL ABUSE

Alcohol affects vision, judgment, reaction time, and memory. The effects of alcohol vary from person to person, some become quiet or depressed while others become aggressive and argumentative. Long-term users can develop tolerance. The physical signs of misuse may not be easily identified. Alcohol in the blood rapidly enters every organ and every cell. It directly affects the brain and is most toxic to the developing adolescent brain. The toxic metabolic byproduct of ethanol, acetaldehyde, can be found in the brain. Acetaldehyde damages brain cells, affecting the function of these cells and resulting in cell injury or cell death.

Alcohol intoxication is the primary contributor to motor vehicle accidents (the leading cause of adolescent death) and is associated with suicide attempts, depression, anxiety, mood disorders, and ADHD. Alcohol use at an early age is a strong predictor of future alcohol-related problems. Early age use of alcohol is also associated with greater sexual risk taking, academic problems, other substance abuse, and delinquent behavior. Binge drinking is becoming more common among teens and college students. Binge drinking is particularly dangerous because of the risk of alcohol poisoning leading to suppressed gag reflex, depressed respiratory rate, and death.

### Indicators for Alcohol:

- Difficulty in recalling instructions
  - Shortened attention span
  - Thick, slurred speech
  - Sluggish, sleepy
  - Slowed reactions
  - Uncoordinated & unsteady gait
  - Faulty judgment
  - Lack of coordination
  - Greatly impaired driving ability
- ❖ **(Hangover indicators)** headaches, nausea, dehydration, unclear thinking, unsettled digestion, aching muscles, slow moving, unmotivated

### New trends in consuming alcohol

#### Alcohol-containing candy

A trick popular with teens is to soak Gummy Bears or Worms in alcohol. Vodka and Everclear have less alcohol odor than other alcohols and are favored. The Bears or Worms are placed in a dish and covered with alcohol. They absorb all the liquid. The candies are initially sticky and look the same as untreated candy. They are then eaten as ordinary candy - only with a buzz!

#### Tampon dipping and "butt-chugging"

A new craze at high school and college campus parties is "butt-chugging" which requires a device for giving an alcohol enema. The mucosal absorption of ethanol leads to rapid intoxication without producing a significant breath-odor of alcohol. "Tampon dipping" (tampons soaked in vodka) is another craze with similar results and are used by both men (rectal insertion) and women (vaginal insertion). Both can cause extremely high Blood Alcohol Content.

#### Vaporization

A new device, Alcohol Without Liquid (AWOL), is becoming popular. The device vaporizes alcohol so that it may be inhaled. The AWOL device consists of two components: an oxygen generator and a hand-held vaporizer. Tubes from the generator attach to the vaporizer. Alcohol (typically vodka) is poured into the vaporizer and mixes with oxygen producing an alcohol-mist. The mist is inhaled resulting in rapid absorption of alcohol from the lungs and immediate intoxication. Vaporization causes very high blood alcohol content much quicker than drinking alcohol does, thus making it more dangerous.

Teens may make their own AWOL device using a plastic bottle, plastic or rubber tubing and a hand held air pump. A hole is put in the lid of a 1-2 liter bottle. An inflation-pin typically used for inflating basketballs is inserted through the hole in the lid. About a half a cup of Vodka or some other type of alcohol is poured into the bottle. A tire pump is connected to the pin and air is pumped into the bottle until the bottle is firm. The pump is pulled; causing a pressure change in the bottle and the liquid is converted into vapors and is then inhaled through the hole in the lid. The user quickly becomes intoxicated. A small air compressor can also be used.

### **Hand Sanitizers**

Drinking hand sanitizers is popular. The gelling agents are “salted out” by adding a pinch of table salt to the bottle of hand sanitizer. The gelling agent precipitates out and the clear liquid is then decanted, and consumed. Once separated, the alcohol can be anywhere from 120-170 proof, thus getting one drunk rather fast. The ethanol in hand sanitizers may be adulterated (denatured) with chemicals, isopropyl alcohol, or methyl alcohol, all of which may pose significant medical hazards if ingested. The label on the hand sanitizer may not always indicate if these other types of alcohol have been added, or how much has been added.

### **Alcohol consumed with other drugs**

In an attempt to get more “high” or to experience a longer lasting “high” users may mix alcohol with other substances. Combination use is most common among adolescents and college-age students.

### **Alcohol and caffeine**

Abuse of the combination of alcohol and caffeine is dangerous and may be deadly. Commercially available energy drinks with 12% alcohol are sold in liquor stores and are showing up at teen parties. These drinks are sold in bright colored cans and marketed to underage drinkers. Brand names include Four Loko, Jooze, Jilt, and Tilt. Alcohol may be mixed with high-caffeine energy drinks (i.e. Amp & Everclear, Jager & Redbull) to achieve the same effects. Caffeine masks the effects of alcohol and the user keeps drinking, often until he/she passes-out. Recently, a caffeine-containing inhaler (Aero Shots) has hit the market and is being used in combination with alcohol.

### **Alcohol and Adderall (ADDYS)**

The combination of Adderall and alcohol is often described as a “safe” replacement to cocaine and alcohol but combining these may have deadly consequences. Many people are using this mixture as a party drug cocktail that allows them to extend their partying. People will snort or smoke the pills to get “high” quicker. Adderall acts as a stimulant to people who do not suffer from attention disorders and counteracts the depressive effects of alcohol. When Adderall and alcohol are combined, a number of things happen. Because Adderall masks the depressive feelings induced by alcohol, many users drink excessive amounts of alcohol resulting in physical harm. Prolonged use of this drug cocktail can lead to paranoia, anxiety, and severe depression. Physically, it can cause nausea, vomiting, weight loss, heart palpitations, and headaches. If used over a long period of time, users may experience convulsions, irregular heartbeats, fevers, malnutrition, tremors, and muscle twitching.

### **Alcohol Withdrawal**

Withdrawal may occur in chronic users and in binge drinkers. Common symptoms are headache, nausea and vomiting, sweating and hypertension. In more severe cases, confusion, hallucinations, delirium tremors (DT's), and seizures may occur. DT's are particularly dangerous. The death rate is 5% in treated individuals and 35% if untreated.

### **Below are some common OTC drugs that can impair drivers:**

- **Antihistamines:** Many of them slow reaction time and impair coordination.
- **Decongestants:** Many over-the-counter decongestants can cause drowsiness, anxiety and dizziness.
- Abuse/High doses can cause hyper-stimulation, hallucinations, increased heart rate & BP, sweating, vomiting, panic and agitation

### **Dextromethorphan –DXM (Robo-Tripping)**

Users of products containing DXM are those that adhere to the manufacturer's suggested guidelines for dosages. Users consuming DXM-containing cough syrups (such as Robitussin) for medical reasons typically ingest 10 to 20 mg every four to six hours or 30 mg every six to eight hours. On the other hand, a single dose for recreational users can range from 240 to 1500 mg. Heavier users have been known to ingest up to 3 or 4 bottles a day—an amount that can induce a multitude of negative side effects. According to the DEA, Internet sites inform young users to “drink the syrup expeditiously in order to absorb enough DXM from the drink prior to the impending incidence of vomiting which will occur as a result of the ingestion of the large volume of syrup required for intoxication.” In addition to traditional syrup forms, there is also evidence that DXM is being sold over the Internet in powder, and pill forms. These powders can be snorted, smoked or injected. Five recent deaths have been reported from abusing the powder. Powders and pills have an effect similar to syrups without the need to consume large quantities of the substance in a small time period. Users can also find instructions on how to extract DXM from syrups and gel capsules on the Internet, thus enabling them to

inject or orally consume this active ingredient.

### Physical and Psychological Effects of DXM

DXM is a dissociative anesthetic that at high doses can create powerful psychedelic effects. It is sometimes compared to PCP and ketamine, which are also dissociative anesthetics. People are concentrating down the liquid resulting in a gooey substance that they smoke on aluminum foil, or put into capsules, then the user acts like they are on PCP. The effects caused by DXM use vary depending on the dose. Users often describe dose-dependent 'plateaus' that range from a mild stimulant effect with distorted visual perceptions to a sense of complete dissociation from one's body. Effects generally last for 6 hours, but will ultimately vary depending on the amount of DXM ingested and if it is used in combination with other drugs or chemicals. Other effects can include:

Impaired judgment and mental functioning	Paranoia
Loss of coordination	Panic or anxiety attack
Visual and auditory hallucinations	Sweating
Lethargy	Hallucinations with screaming from fear
Nystagmus (rapid eye movement)	Rashes, red blotchy skin
Tachycardia (racing, pounding heart)	Euphoria
Slurred speech	Confusion
Hot flashes – leading to hyperthermia	Numbness in fingers and toes
Inappropriate laughing	Nausea & vomiting
Seizures	Tactile hallucinations
Dissociative state	Altered perception of time
Visual disturbances	Feelings of floating
Sensitive to light	“Horrible Feeling”

### Tolerance, Dependence & Withdrawal

The level and likelihood of experiencing tolerance and dependence will ultimately depend on the dose and frequency of use. When it is abused regularly, DXM can actually cause some of the symptoms (i.e., insomnia and dysphoria) that it is designed to cure. In addition, high-dose chronic use of DXM can lead to the development of toxic psychosis - a mental condition characterized by a loss of contact with reality along with a confused state - as well as other physiological and behavioral problems. It is unknown, however, what effect infrequent use of low doses has upon the user, although anecdotal reports of prolonged use describe DXM as a drug with moderate physical dependence and tolerance. Most users that display symptoms of withdrawal will experience some form of anxiety, restlessness, insomnia, diarrhea, vomiting, severe weight loss, and upset stomach.

Dextromethorphan (Robitussin and other over the counter cough preparations) acts as a hallucinogen when taken in large doses. Dosing instructions are available online. Large doses also cause nausea and vomiting, loss of coordination, hot flashes, numbness, and a “horrible feeling” in users, yet repeated abuse is common. Effects may last for several hours. Robo-tripping has been implicated as a “gateway” to using other hallucinogenic drugs. If the cold medication contains Tylenol, or any other brand of acetaminophen, liver damage may occur.

### Loperamide (Imodium AD)

Loperamide is an anti-diarrheal, sold over-the-counter, that is available in liquid, capsule, or tablet form. It is recommended to be taken orally in 2–4-mg doses for 24–48 hours. It is sold under brand names such as Imodium®, Kaopectate 1-D®, Maalox® Anti-Diarrheal, and Pepto® Diarrhea Control. These products are safe when used as directed, but high doses are fatal. People consume 50-300 tablets and get the effects of Opiates. Loperamide has  $\mu$ -opioid agonist activity like morphine, heroin, oxycodone and other opioids. Users will consume a large amount to help with withdrawal symptoms, or to get high if they cannot find their opioid of choice. Excessive doses of Imodium A-D can lead to heart problems, kidney and liver failure, and even death. The National Poison Center data recorded a 71% increase in calls related to Loperamide abuse/misuse from 2011 to 2014. The Annals of Emergency Medicine reported case findings in their May 2016 issue.

### Hallucinogenic and psychoactive plants

#### Exotic plants

These plants are smoked or ingested and are not indigenous to the US. They are available from drug dealers or the internet.

Blue Lotus grows along the Nile River and is sold online and in head shops as a concentrated tablet that looks like and acts like the tranquilizer Xanax. It may be smoked or ingested.

Khat grows in the Horn of Africa (Djibouti, Eritrea, Ethiopia, and Somalia) and the Arabian Peninsula. Chewing Khat is a social custom dating back thousands of years. Khat contains cathinone, a stimulant like meth, and causes excitement, loss of appetite and euphoria. Khat is illegal in the US, however, it is still being seen. When Khat is sent from Africa it often dries out and when it does Cathinone breaks into its byproducts and now is not illegal. Law Enforcement has a very difficult time prosecuting because it is no longer scheduled. The plant material is still active even though it has dried, and users will chew large amounts. When they chew it, a white alkaloid dries around their lips. They get stimulated and can become aggressive, especially if they mix it with alcohol.

### **Kratom**

Kratom is a plant common to Southeast Asia & Thailand and can act as both a stimulant and a narcotic. At a low dose the user becomes talkative, energetic, alert, and excited. At a high dose the user's pupils constrict, they are in a calm and dreamy state, less sensitive to pain, have a dry mouth, may itch, and can have nausea. At high doses this plant has an opioid-like effect and users may exhibit psychotic symptoms, including hallucinations, delusion, and confusion. The plant material is widely available online and legal. Kratom is available in pills, and as loose plant material, which is used to make a "tea." People use it as a substitute for Opioids and to help with Opioid withdrawal. It is addictive, has no recognized medical use, has caused many deaths across the US, and DEA is looking at making it a schedule I drug.

### **Geranium Extract (methylhexanamine or dimethylamylamine, sold as "Pump-It Powder" or Jacked 3D")**

Dimethylamylamine (DMAA) is made synthetically in a lab and was originally used as a nasal decongestant. Today it is sold as a dietary supplement used for ADHD, weight loss, improving athletic performance, and bodybuilding. Supplements that contain this ingredient list: rose geranium, geranium oil, or geranium stems on the label. DMAA has also been marketed extensively as a dietary supplement but its safety has been questioned as a number of adverse events and at least 5 deaths have been associated with DMAA-containing supplements. DMAA is sold as an "enhanced plant vitamin" but labeled "not for human consumption." It may be smoked, ingested, or snorted and its effects may last 4-6 hours. It has amphetamine-like effects including:

- Psychotic symptoms
- Triggers DAR signs and symptoms consistent with CNS stimulants & hallucinogens
- Heart rate, body temp, internal clock accelerated
- Pupils dilated and may exhibit sluggish response to direct light
- Piloerection (gooseflesh)
- Sensory distortions
- Gross paranoia
- High 4-6 hours, can be 12 hours and longer
- Dose dependent

## **Abuse of Prescription Opiates (Pain Killers)**

### **Identifying Narcotic Abuse: Signs of Abuse**

The warning signs of addiction to prescription drugs include the following:

- Using more than the recommended amount of the medication
- Using prescription pills prescribed for others
- Complaining of vague symptoms to get more medication
- Lack of interest in treatment options other than medications
- Mood swings
- Seeing several doctors and/or pharmacies to get more pills

Opioids are commonly prescribed for pain-relief and include morphine, tramadol, opium, codeine, hydrocodone, methadone, hydromorphone, oxycodone, and codeine. Prescription pain-killers within this class include morphine, codeine, hydromorphone (Dilaudid), tramadol (Ultram), oxycodone (OxyContin, Roxicodone, Percodan, Percocet), hydromorphone (Opana), and hydrocodone (Vicodin). Opiates also act as depressants. The popular prescribed painkillers are addictive and abusers may exhibit any of the following:

### Signs of Addiction

Constricted pupils	Drowsiness & excessive yawning
Lack of energy/motivation	Track marks/Abscesses
Skin cool to touch	Itching of face, arms, and body
Ptosis - "on the nod"	Lack of coordination
Slurred, slowed raspy speech	Inability to concentrate
Slow/shallow breathing	Depression, apathy, & withdrawal
Depressed reflexes - slow	Fresh puncture marks
Impaired mental function and alertness	Dry mouth
Flushing of neck and face	Drooping eyelids

### Medical conditions use may mimic:

Fatigue	Very recent head injuries
Diabetic reactions	Hypotension (low blood pressure)
Severe depression	

Women are 2-3 times more likely to be prescribed these drugs and are about 2 times more likely to become addicted. Seniors take more of these drugs than the rest of the population, increasing their odds of becoming addicted. However, recent national studies show that the sharpest increase in users of prescription drugs for non-medical purposes is the 12 to 25 year age group. Those who abuse opioids may intensify their experience by taking the drug in ways other than those prescribed. For example, OxyContin is an oral medication but may be snorted or injected, thereby increasing their risk for serious medical complications, including overdose.

### Opiate pain relief

Opioids act by attaching to opioid-receptors that are found in the brain, spinal cord, gastrointestinal tract, and other organs in the body. When these drugs attach to their receptors, they block the perception of pain (and cause brain injury, see below). In addition to relieving pain, opioids produce drowsiness, mental confusion, nausea, and constipation. Some people experience a euphoric response to opioid medications, since these drugs also affect the brain regions involved in reward.

### Short Term Effects

Short-term administration of prescription drugs produce euphoria, sedation and a feeling of tranquility. Repeated administration rapidly produces tolerance (increasing the dose, reducing intervals between doses or both) and intense physical dependence. Overdose causes respiratory depression. Continued use of opiates makes the body rely on the presence of the drug to maintain rewarding feelings and other normal behaviors. The person is no longer able to feel the benefits of natural rewards (food, water, sex) and cannot function normally without the drug present.

### Long Term Effects

Opiates are considered extremely addictive and this addiction affects the structure and function of the brain, especially motivation and emotions. The ways in which the nerve cells communicate are changed because of damage to neurotransmitters and to the shapes of brain cells. The damage alters the way people behave.

Drug interaction poses another risk. If the physician or pharmacist is not aware of everything that a person is taking they may prescribe a medication that will interact with the illicit drug and result in serious side effects. Vitamins and herbal remedies fall into this category. The combination of alcohol and prescription drugs can affect the central nervous system, leading to respiratory distress or failure, or even death.

### Commonly abused prescription opiates

Of the 7 million people abusing prescription drugs, 5 million are abusing opiate painkillers. With the reformulation of OxyContin limiting abuse, the prevalence of other prescription painkillers is increasing.

**Oxycodone - Percocet & Roxicodone:** Oxycodone is among the fastest growing of all prescription drugs people abuse in the United States. Percocet is the brand name of a painkiller containing oxycodone and acetaminophen (Tylenol). Overdose can cause, abdominal pain, dark urine, clay-colored stools, liver damage, and jaundice. Percocet known as Perc's on the street, can be



smoked, snorted, and injected. Percocet taken in large doses, or when the tablet is crushed for snorting, smoking or injecting (destroying the time-release mechanism) and can cause a “high” similar to using to heroin.

Roxicodone is a painkiller in the oxycodone family with a high potential for abuse. It is in an immediate-release form and acts more quickly than the timed-release forms of opiate pain-killers. Addicts and treatment providers state that 30mg of Roxicodone when abused by snorting, smoking, or injecting is the painkiller that produces effects most similar to heroin. On the street it is known as Blues, OxyLR, Blueberry, Thirties, OC, or Roxys.

**Oxymorphone – Opana:** Opana became more sought after once OxyContin was reformulated. Opana is an extended release opiate painkiller in the oxymorphone family. Many think oxymorphone has less potential for abuse than OxyContin (oxycodone), however oxymorphone is metabolized oxycodone. Opana is extremely potent with many experts claiming it is more addictive than cocaine or heroin. Opana can be snorted, smoked, or injected.

In 2011, Indiana’s state health department investigated an increase in Hepatitis C cases in a county in southeastern Indiana. As more Opana users transitioned to injection, hepatitis C spread quickly through sharing of syringes. The CDC estimated that between 2010 and 2012, new hepatitis C infections rose 75%, to about 23,000 new cases a year. In January 2015, the Indiana State Health Department began an ongoing investigation of a rise in HIV cases in this county. Of the 135 confirmed cases of HIV, 108 cases report dissolving and injecting Opana as their drug of choice. This is the first documented HIV outbreak in the United States associated with injection of a prescription painkiller. (*CDC, Morbidity & Mortality Weekly Report, April 2015*)

In August 2012, three cases of unexplained thrombotic thrombocytopenic purpura (TTP), a rare but serious blood disorder, were reported by a nephrologist to the Tennessee Department of Health (TDH). By the end of October, 15 such cases had been reported. A case-control study was conducted, and investigators determined that the cases of TTP-like illness were associated with dissolving and injecting tablets of Opana ER. Seven of the 15 were treated for sepsis and TTP-like illness, 12 patients reported chronic hepatitis C or had a positive test for anti HCV antibodies. Health care providers and pharmacists who prescribe or dispense Opana ER should inform patients of the risks associated with the drug being used in ways other than being prescribed. Health care providers should ask patients with TTP like illness of unknown origin about any IV drug use. (*CDC, Morbidity & Mortality Weekly Report, Jan 2013*)

Signs of Opana overdose:

- Suppression of breathing
- Cold or clammy skin
- Muscle flaccidity
- Stupor
- Coma
- Chest pain
- Drop in blood pressure & heart rate
- Numbness in arms and legs
- Circulatory collapse
- Cardiac Arrest
- Death

**\*\*OPANA was pulled off the market in June 2018 due to the above health issue.**

### **Dilaudid & Fentanyl Abuse:**

Dilaudid on the street is known as “Big D” “M-80’s” and “Peaches”. Dilaudid is a schedule II drug and often used to manage moderate to severe pain. Dilaudid is hydromorphone hydrochloride and is a very powerful semi-synthetic opioid narcotic painkiller considered to be almost 10 times stronger than morphine. Dilaudid is often used as an alternative to morphine. Dilaudid takes effect within 15 minutes and lasts for longer than six hours. It can be addictive like all other opiates. Tolerance and dependence can occur within a couple weeks of use. Dilaudid can be ingested, smoked, snorted or injected.

Common indicators of Dilaudid abuse:

**Physical Indicators:**

Nausea and vomiting  
Respiratory depression  
Stomach Pain  
Difficulties urinating  
Dizziness/lightheadedness  
Track marks on arms, legs, between toes  
Circulatory collapse  
Heart attack  
Stroke  
Coma  
Seizures

**Psychological Indicators:**

Worsening of emotional wellbeing  
Exacerbation of mental illness symptoms  
Delusions  
Hallucinations  
Paranoia

**Mood indicators:**

Depression  
Anxiety  
Mood swings  
Agitation  
Irritability

Fentanyl is one of the strongest opiate drugs on the market. It is a synthetic drug, is 50-100 times more potent than morphine, and 15 times more potent than Heroin. It is used to treat severe pain in individuals with injuries or chronic illness, after surgery or prescribed for individuals who are tolerant to other opiates. It can be powdered out, liquid, pill, lollipop, or gel patch form. It can be ingested, smoked, snorted, injected, or addicts will chew on the patch. Fentanyl is often stolen from hospitals, pharmacies, and home hospice care.

Fentanyl is often added to Heroin on the street when Heroin is dirty or of poor quality. Powdered fentanyl is indistinguishable from heroin so users have no way of knowing if it's mixed in heroin or being sold in replacement of heroin (china white). This potent drug can be used alone or in combination with another substance and just one use, can kill you. More and more states are seeing death from fentanyl overdose alone, indicating it is being sold as heroin or being used as its replacement.

Indicators of Fentanyl abuse:

Dizziness and lightheadedness  
Dry mouth  
Retention of urine  
Suppression of breathing  
Severe constipation  
Itching or hives  
Nausea and vomiting  
Loss of appetite  
Weight loss

Difficulty seeing  
Depression  
Hallucinations  
Bad dreams  
Insomnia  
Sweating  
Tremors  
Swelling of arms and legs  
Headaches

***\*\*Note, "fake" or "mock" Xanax pills laced with Fentanyl have been found on the street causing overdoses and death across the nation.***

**Poppy Tea**

Poppy tea is generally brewed from the seeds, pods, and/or straw of the opium poppy (*papaver somniferum*), grown in Mexico, South America, and Asia. The Poppy seeds and pods contain opiates, including morphine, thebaine, codeine, papaverine, and noscapine, with the pods containing the largest concentration of opiates. The pods can be ordered online, or purchased at hobby stores where they are sold for flower arrangements. Users crush the seeds, pods, and stems (known as straw) then brew in very hot water creating a tea more potent and potentially more likely to cause an opiate-related overdose than brewing the seeds alone. The tea is very bitter, and the darker the color, the more potent it is. Some users add a flavoring to counteract the bitter taste. Some users will evaporate the liquid into a concentrate, and powder it out. They will put the concentrated liquid and/or powder into gel caps to ingest. The pods, straw, powder and liquid concentrates are a controlled schedule II drug by the DEA.

Upon ingestion of the tea, it can take from 20-60 minutes to start to feel the effects, and last about four to eight hours. Since this mixture contains opiates it can be addictive with tolerance building up within a week or two of daily use. Effects are similar to opiates and include: warming sensation throughout body, constricted pupils, euphoria, nausea and vomiting, constipation, stomach and abdominal discomfort, drowsiness, and loss of concentration. Adverse effects, which increase with dosage, can include sleepiness, mild stomachache, lethargy, itching, slowed breathing, and nausea. At high doses, death can occur through respiratory depression.



A number of deaths have been reported across the US from the ingestion of poppy tea. The tea has also been known to be mixed with benzodiazepines, increasing the negative effects and resulting in death.

**Prescription Codeine:** Codeine is an opiate used for managing pain and cough. Teens and young adults are abusing large amounts of liquid cough medications containing codeine in drinks known on the street as Syrup, Lean, Sizzurp, Texas Tea, Memphis Mud, or Purple Drank. This drink contains prescription strength cough medicine with codeine and promethazine (antihistamine) mixed with sugary candy, soda, or Arizona Tea to make it sweet and palatable. The combination is illegal and dangerous. The amount of cough syrup consumed can exceed up to 25 times the recommended dose.

The consumption of large amounts of this drink is glamorized in Hip-Hop music on the internet and on YouTube. There have been a number of arrests and deaths related to this drug combination. Most famously, rapper Lil Wayne talks and raps about use of this drink – he recently spent days in a coma from abusing it. It is also glamorized by the group Three Six Mafia. At least three hip hop rappers or producers have died, including DJ Screw and musician Big Hawk, both from Houston. This concoction is very dangerous since promethazine is a CNS depressant and codeine is a respiratory depressant. If the drink is combined with alcohol or other drugs, the risk of death is even more likely.

Signs of use include: slurred speech, blurred vision, euphoria, dissociation from one's body, impaired motor skills, lethargy, sedation, and drowsiness. Effects of Purple Drank include:

- Constricted pupils that do not respond well to light
- Rough, raspy voice
- Slow, slurred speech
- Uncontrolled eye movement
- Droopy eyes
- Slowed heart rate
- Drowsiness & weakness
- Loss of balance & coordination
- Paleness
- Constipation
- Urinary tract infection
- Dental problems
- Addiction
- Death (fatal respiratory depression)

## **Designer Opiates**

**Acetyl Fentanyl:** Acetyl fentanyl is a new and lethal drug and is becoming more popular among narcotic abusers. The drug looks similar to heroin and is being sold as heroin. Numerous deaths among intravenous users of this drug have been reported across the US. In fact, the drug came to the attention of authorities after several deaths of narcotic addicts were investigated and the drug was identified in blood samples by ELISA testing (using antibodies) but not detected by GC/MS (detects chemical molecules). The drug is not available by prescription and said not to be available in the US. However, the drug is available online and sold without questions as a “research chemical.” Overdoses are treated the same as any opiate overdose. However, the drug is 15X more potent than heroin and larger doses of rescue medications are often necessary.

**Carfentanil:** This new opiate was first created by Janssen Pharmaceuticals in 1974 and is an analogue of Fentanyl. It is marketed under the trade name *Wildnil* and used as a general anesthetic for large animals, i.e. elephants, rhino's, hippo's and bears. It is extremely potent, and claimed to be 10,000 times more potent than Morphine. It is a white powder that can be used anyway, and sold on the street as Heroin. It can be added in Heroin to make it more potent, and can be mixed with Cocaine as a “speed ball.” It is causing deaths across the nation.

**U-47700:** Known as “pink” on the street, it has been a problem since beginning of 2016. It is a designer opiate being made in drug labs in China. The U in the name stands for Upjohn, a pharmaceutical manufacturer that developed the drug in the mid-1970s. Scientists were looking for a synthetic alternative to morphine. Effects are similar to Tramadol. It is about 8X more potent than

Morphine, and can be used any way - injected, snorted, smoked or put in pills and swallowed. Some people have “plugged” it, meaning dissolving it in a little water and using rectally, it will absorb very quickly like a suppository. U-47700 works as a selective  $\mu$ -opioid receptor. The drug is sold in pill, powder and liquid form, and can be bought online for less than \$40 for a bottle of pills. It has been linked to 50 deaths across the nation. It is mixed with Heroin, sold as Heroin, and can be mixed with Cocaine.

Effects from use can be: Muscle aches, nausea & vomiting reported, irritable, mood swings, euphoria, pain relief relaxation, constipation, itching, difficulty urinating, constricted pupils, respiratory depression, death, anxiety suppression, depression. Short duration of effects can cause double dosing. It is corrosive to mucous membranes, and vaporizing the substance can damage the lungs. Sublingual administration is likely to damage the skin in the mouth.

At least three states — Ohio, Wyoming and Georgia — already have taken action to ban U-47700 after it was connected to overdoses. Wisconsin has banned it - it is illegal to buy or possess. A spokeswoman for the U.S. Drug Enforcement Administration said that the agency is studying the opioid but hasn't yet moved to control it. Since Sept of 2016, 15 fatalities have been confirmed. Belgium had a death from U-47700 being mixed with Fentanyl.

**Furanyl Fentanyl:** This is an illicit designer version of fentanyl being mass-produced in clandestine labs in China - then smuggled into the United States via traditional distribution routes through Mexico. It was first described in patent literature in 1986 and has no approved medical use, and it has also not been approved by the FDA for human consumption. Research shows it to be 5X more potent than fentanyl - has an ED50 value of 0.02 mg/kg in mice.

It has been encountered as a single substance as well as in combination with other substances of abuse, including heroin, fentanyl, butyryl fentanyl, and U-47700. This potent drug has killed hundreds of people throughout Europe and the former Soviet republics, and the US has confirmed 128 fatalities associated with furanyl fentanyl in 2016. It was detected in 24 states in 2016, and is still available across the country. DEA reports use of powder can cause seizures, and treatment centers report users are not responding to normal protocol when trying to get someone off of these powerful drugs - requires higher doses of methadone for detox.

**W-18:** This designer opiate is likely coming from Chinese drug labs where little-known drugs and analogues of known drugs are mass-produced and sold online. It is 100 times more powerful than fentanyl and 10,000 times more powerful than morphine. It is known on the street as W-18, “beans” or “shady 80's” - a play on 80mg OxyContin pills. This drug can be in powder form and it can also come as little green round pills looking similar to 80mg OxyContin. Close examination reveals they are not Oxy pills. Recently it has been seen on the street sold as Fentanyl pills. The powder has been mixed with heroin, and found cut with Cocaine.

This drug was first synthesized in 1980 at the University of Alberta where scientists were looking at new analgesic drugs, where studies in animals showed it had pain-killing activity in mice. It has no therapeutic use, and due to potency is causing deaths all over Canada and the USA.

***Due to the potency of these new designer opiates, Narcon (Naloxone) needs to be administered in high doses. Doctors and EMS across the country report using upwards of 10+ doses to an IV Narcon drip. Even with high doses, the lifesaving efforts often are resulting in death.***

## Heroin Abuse

Heroin is an opioid drug synthesized from morphine. Heroin may be a white or brown powder or a black sticky substance known as “Black Tar Heroin.” The drug can be smoked or vaporized and inhaled, snorted, sniffed (dissolved in nasal spray), or injected. When it enters the brain, it is converted back to morphine and binds to opioid brain receptors, especially those in the pain-perception and reward areas of the brain and in the brain-stem which controls wakefulness, blood pressure and breathing.

Moderate doses of heroin cause euphoria, a warm “rush” sensation, constricted pupils, and nausea. Higher doses result in restlessness, constipation, droopy eyelids (on the nod), shallow and slow breathing, depressed cough reflex, sweatiness, lethargy, slow heart rate, and sedation. Overdose results in respiratory failure and death. The drug is highly addictive and withdrawal symptoms (cold turkey) may begin within 6 to 24 hours of discontinuation of the drug. However, the time frame can fluctuate with the degree of tolerance as well as the amount of the last dose.

Withdrawal symptoms may include sweating, malaise, anxiety, depression, priapism, extra sensitivity of the genitals in females, general feeling of heaviness, cramp-like pains in the limbs, excessive yawning or sneezing, tears, runny nose, sleep difficulties (insomnia), cold sweats, chills, severe muscle and bone pain, nausea and vomiting, diarrhea, cramps, and fever.

Heroin abuse is associated with a number of serious health problems including fatal overdose, spontaneous abortion, and serious infectious diseases (HIV, Hepatitis C, sexually transmitted diseases). Pregnant women who are abusing heroin put the fetus at extreme risk. These problems are discussed in the section on the abuse of prescription-pain-killers.

### **What Are The Warning Signs Of Heroin Use?**

- Lack of personal hygiene
- Tendency toward recklessness
- Withdrawal from family and friends
- Items of value being "lost or stolen"
- Burnt foil being present in car, room, or in personal effects
- Mood swings, intense rage, lying, and manipulation
- Sudden drop in grades and excessive ditching at school
- Finding evidence of prescription drugs
- Scratching hands and arms
- Strong craving for sweets, morning, noon, and night.
- Possession of drug paraphernalia (needles, burnt spoons, cotton balls, pens, cut-off water bottles, foil)
- Foil & toilet paper rolls are commonly used to smoke heroin

### **What Are The Physical Signs Of Heroin Use?**

- Runny nose and constant sniffing
- Needle marks on arms and/or legs, between toes, in groin area
- Sores on nostrils and top of lips from smoking heroin
- Constant "hacking" cough from smoking heroin off of tin foil
- Loss of appetite and dramatic weight loss
- Nodding off during day and inability to sleep at night
- Dark circles under eyes and constant sleepy or groggy expression
- Scratch marks all over body, especially neck and arms

### **Treatment of opiate overdose of prescription drugs and heroin**

Opioid-related disorders that require medical management include opioid intoxication, opioid overdose, opioid withdrawal, and treatment of acute pain in people already on maintenance therapy. Short-term and long-term treatment includes a combination of opioid agonist therapy (substituting one drug for another) and psychotherapy.

Deaths from abuse and overdose of these substances are becoming more and more common, especially among women and adolescents. Excessive doses, whether taken by mouth or injection, result in respiratory depression and asphyxiation. In this situation, rapid emergency treatment is imperative. Because overdose usually occurs in the presence of other people and because medical care is often not sought or sought too late, at-home naloxone programs have been piloted and have been found to save lives. Naloxone prescription programs enable users to have kits on hand to administer intranasal naloxone to reverse the effects of narcotics.

For most addicts long-term treatment begins with detoxification, the controlled and medically supervised withdrawal from the drug. No single approach to detoxification is guaranteed to be best for all addicts. Medications used to detoxify the addict include methadone and buprenorphine or buprenorphine combined with naloxone (Suboxone®). Suboxone is often favored since abuse of this medication will cause withdrawal symptoms that addicts are trying to avoid. Maintenance medications used along with counseling include methadone, buprenorphine, or Suboxone or extended release naltrexone injections. Most addicts will resume taking the drug unless treatment includes long-term psychotherapy.

Symptoms of withdrawal from opiates include, but are not limited to:

#### Physical Symptoms

Tremors  
Cramps  
Deep Muscle and bone pain  
Chills  
Perspiration (sweating)  
Diarrhea/Vomiting  
Tachycardia (rapid heartbeat)  
Itching/scratches

#### Behavioral Symptoms

Dysphoria  
Malaise  
Cravings  
Anxiety/Panic attacks  
Paranoia  
Insomnia  
Depression  
Flu-like symptoms

#### Driving indicators for Drug Classes

	<u>S</u> timulants	<u>H</u> allucinogens	<u>O</u> piates	<u>M</u> arijuana	<u>D</u> epressants	<u>I</u> nhalants	<u>P</u> CP
<b>HGN</b>	NO	NO	NO	NO	YES	YES	YES
<b>VERT</b>	NO	NO	NO	NO	YES	YES	Maybe YES
<b>CONV</b>	CONV	CONV	CONV	LACK CONV	LACK CONV	LACK CONV	LACK CONV
Sunlight 2.9 Norm 4 - 6 <b>Pupil</b>	Dilated	Dilated	Normal to Constricted	Normal to Dilated	* Methaqualone will dilate pupils Normal	Normal	Normal
<b>8</b> <b>Pupil Reaction to Light</b>	(Lid tremors) Slowed	Normal	(Droopy lids) Very little to None	Normal	Slowed	Normal	Normal
Norm 60 - 90 <b>Pulse</b>	UP	UP	DOWN	UP	DOWN	UP	UP
120-140/70-90 <b>B. P.</b>	UP	UP	DOWN	UP	DOWN	UP	UP
Normal 98.6 <b>Temp</b>	UP	UP	DOWN	NORMAL	NORMAL	Depends on Substance	UP
<b>Muscle Tone</b>	Tremors Rigidity	Tremors Tension	Usually Normal	Tremors Normal	Relaxed to Flacid	Usually Normal	Rigidity

#### **Drug Testing**

Most laboratories use a 5 panel urine drug screen that checks for PCP, marijuana, cocaine, methamphetamines/amphetamines and opiates. This drug screen is most commonly used for regular workplace screening. Tests that detect a specific drug may be used for diagnosis and monitoring.

The standard U.S. National Institute of Drug Abuse (NIDA) urine test includes a one-step rapid assay for the detection of opiate and opiate metabolites. Heroin breaks down into codeine and morphine. Codeine breaks down into morphine. The opiate drug tests look for codeine, morphine, and 6-acetyl-morphine. The presence of 6-acetyl-morphine is relatively conclusive of recent heroin use, but is only detectable for a few hours after use. The presence of codeine can be the result of either heroin or codeine use. The presence of morphine can be the result of the use of heroin, codeine, or morphine. Relative levels of codeine and morphine can help determine their origin. Fentanyl does not show up in the 5-panel test and a specific test must be requested. Opiates may be detected in the urine for up to 4 days after use: opium for 1-2 days, heroin for 1-4 days and morphine for 3-4 days.

A number of substances may cause “false positive” tests, including poppy seeds, cough medicines containing dextromethorphan, Nyquil, kidney infection, kidney disease, diabetes, liver disease and various antibiotics.

Users can adulterate the test to mask the results by adding “Urine Luck” to the sample. This product contains a chemical (pyridinium chlorochromate) that alters the molecular structure of opiates (and THC). However, this agent is easy to detect. Instant drug-testing urine dip cards are available that test for the 5 drugs in the NIDA standard test and also detects oxidants and other agents that can cause the urine drug test to be negative.

Saliva drug testing can generally detect drug use that occurred in the last few days. This makes saliva drug testing excellent for post-accident drug testing, pre-employment testing and random testing. Most saliva drug tests are limited to the NIDA-5 i.e. cocaine, marijuana, opiates, amphetamines and barbiturates but when warranted saliva drug testing can be set up to detect any drug use. Saliva drug testing cannot be beat with conventional mouthwashes.

### **Detection in urine:**

Drugs have certain “detection windows” meaning the amount of time after ingestion that evidence of their use can be detected by a drug test. Alcohol is absorbed and eliminated more quickly than other drugs; therefore, many employers have post-accident testing procedures that require testing for alcohol to occur within two hours of the incident. Other drugs are eliminated from the body at different rates and thus detectable for different periods of time, often long after the drug's effect has worn off. The following are estimates of the length of time that certain drugs are detectable:

- Alcohol – 2-12 hours
- Amphetamines/Methamphetamine – 2-3 days
- Adderall / Ritalin – 2-5 days
- Bath salts – 4-7 days
- Barbiturates – 2-10 days
- Benzodiazepines – 1-6 weeks
- Cocaine – 2-10 days
  - Benzoyllecgonine - 2-4 days
  - Heavy use - up to 10 days
- Codeine – 2-4 days
- Ecstasy ( MDMA) – 2-3 days
- Heroin - 1-3 days
- Morphine – 2-3 days
- LSD – 8 hours
- Marijuana
  - 1 time only – 5-8 days
  - 2-4 times month - 11-18 days
  - 2-4 times week – 23-35 days
  - 5-6 times week – 33-48 days
  - Daily use – 49-90 days
- Methadone – 2-3 days
- Phencyclidine (PCP) – 1 week
- Prescription Opiates – 3-5 days
- Suboxone – 2-7 days
- Synthetic Pot (K2 / Spice) – 4-7 days

*\*OxyContin and other prescription opiates will not show up in a regular urine tox! You need to request the urine be quantified or request a five panel opiate test.*

### **Ways to cheat/beat drug tests**

When something is at stake, people will find a way to cheat the system and drug testing is no different. It is important to know what your drug-testing agency provides. Do they watch someone urinate? Do they allow people to bring their urine to a designated



location? Do they test the temperature or the urine? What drugs are in the panel they are using? What type of testing are they doing: blood, urine, oral swab, hair sample, saliva test? What are the parameters of the different tests? (Know oral swabs can be blown up by washing your mouth out with hydrogen peroxide before they swab. Hair sampling is a 90-day window of exposure; it does not tell you if the person is currently under the influence). Do they test for human antigens? Knowing all the parameters of the drug-testing agency can lessen the possibility of someone cheating the test.

#### **Here are some of the most common ways people try to cheat drug tests:**

1. The whizzinator – a pouch with straps and a small hose that clamps off. People will put someone else's urine in the pouch, strap it to their thigh, and wear it for 2-3 hours before the test. This gets the urine in the pouch to the same body temperature of the person. Then if no one watches them fill the cup, they can loosen the clamp, make dribbling sounds, and then re-clamp it off.
2. Elmer's glue bottle – similar idea to the whizzinator above. The can leave the twist lid on, or take it off and attach small tubing to the top and clamp the tubing off. They put someone else's urine in and strap it to their leg for 2-3 hours before the test. They can then squeeze the urine out, or open the clamp and release the urine.
3. Males will put someone else's urine in small glass vials and roll it up under their scrotum. Sometimes they will tape it to get to body temperature; sometimes they do it right before they get to the collection site. If they are not watched or checked, the urine can easily be substituted for their urine.
4. Females will fill balloons with someone else's, and insert them up their vagina for a couple hours. This gets the urine to match their body temperature, and they can pop the balloon releasing the urine.
5. Females take small thin prescription drug vials, put a hole in the lid, and cover it with duct tape. They fill the vial with someone else's urine and insert it up their vagina. It gets to temperature, they pull off the tape, and the urine dribbles out.
6. Detox drinks – these drinks are sold at vitamin stores (GNC, Vitamin Shoppe, etc.), online, in smoke shops, and in marijuana dispensaries. Majority of the time they do not work, and some drug testing agencies can test for the flushing agents. The testing agencies will list the flushing agents and state the sample is "dilute" which is considered a positive test.
7. Powdered and synthetic urine – these products are sold in smoke shops, marijuana dispensaries, and online. Some synthetic urine products come with their own small heating pad to put the bottle in. It heats the liquid to body temperature. If the drug testing agency tests for human antigens this will easily pop up as non-human, and some agencies will list the urine is synthetic.
8. Cranberry and Niacin pills – this seems to be working. People take high doses of cranberry pills and niacin alternating every 3 hours. Both can legally be purchased anywhere vitamins are sold (pharmacies, vitamin stores, grocery stores, drug stores, and health food stores).

#### **Drug Paraphernalia**

Most people consider drug paraphernalia to be pipes, bongs and syringes, but it can be many things. It can be ordinary items used to disguise or hide the drug or things used to consume the drug. Aluminum foil, small ziplock baggies, pill bottles, spoons, film canisters, cigarette packs, hide-a-cans, makeup kits, gum wrappers, mint tins, liquid breath mint containers, or small glass vials are types of paraphernalia. Parents need to be aware that these kinds of things are either used to conceal the drug or a way of using the drug. Paraphernalia means drug user.

#### **The following is paraphernalia associated with the use of specific drugs:**

Ecstasy:

- pacifiers, lollipops, mouth guards for grinding of the teeth
- glow sticks, surgical masks and mentholated rubs to over stimulate the senses
- water bottles used to bring in alcohol or liquid drugs like GHB, LS

Cocaine:

- glass pipes for smoking crack
- small mirrors and razorblades, rolled dollar bills or cut straws for snorting
- spoons and lighters, syringes, turnicate, cotton pieces

Heroin:



- kits containing – spoons, bottle caps, lighters, syringes, turnicate, cotton pieces, small baggies
- balloons, baggies, burnt aluminum foil, burnt spoons, bottle caps
- scales, razor blades with powder residue, cut straws, needles
- toilet paper rolls filled with dryer sheets – absorb odor from smoking

#### Marijuana:

- rolling papers, small baggies, stash cans, film canisters, tins and roach clips
- deodorizers, incents, potpourri to disguise or mask the odor of marijuana
- pipes –metal, colored blown glass, ceramic large bongs
- brown dryer sheets – kids' stuff them in an empty TP roll and exhale smoke into it

#### Methamphetamine:

- small plastic baggies
- small cosmetics bags (to keep paraphernalia in)
- pocket knives
- Q-tips
- Cut straws
- Pocket torches
- Glass pipes
- Razor blades
- Mirrors

#### Inhalants:

- tubes of modeling glue or super glue
- empty spray cans, small CO2 cartridges
- plastic & paper bags, balloons, tops cut off of liter bottles
- bottle or cans with pens or tubing punctured in the sides

#### Things used to cover up the use of drugs:

- mouthwashes, breathe sprays, mints
- eye drops to conceal bloodshot eyes
- breathe mint droppers and eye drop containers to conceal LSD and GHB
- wearing sunglasses at inappropriate times

## Behaviors

People's behaviors and personalities change when things are happening in their lives, if someone is going thru a divorce or breakup, a child is ill, a family member passes away, they lose their job, etc. Supervisors and employers need to be able to determine if it a personal issue, a bad day, or possible substance abuse. The same goes for your children. Is your kid just having a bad day at school, or fighting with a friend, or is something else going on? When you notice behavioral changes in your child, you want to be able to identify if it is adolescent stress or typical growing pains or is it something else like drug use. When you are trying to figure out what your child has been up to it is important to use and trust your senses.

**What do you see?** Look at the person. Are their eyes red and having problems focusing? They may have been drinking. Are their pupils dilated or constricted? Are they agitated? Are they breathing normal? Is there a strange burn on their mouth or fingers? That could signify smoking something through a metal or glass pipe, or they are huffing Dust Off. Have they developed nosebleeds? This can be indicative of cocaine use. Are they wearing long sleeves even in the middle of summer? This is a way to hide track marks from intravenous drug use.

**What do you smell?** Marijuana, cigarettes, Inhalants (chemical odor), and alcohol all have tell tales odors. Whether you notice the odor on the breath or clothes, it is a reason to be alarmed; for teens, simply being around others who drink or smoke makes it more likely your child will try it. Do not be afraid to follow your nose. Excessive "pleasant" smells, like breathe mints, heavy perfumes,

laundered clothing (for a child who never does their own wash) can be telltale signs of them trying to cover up or mask odors. If you have teenagers, make sure you look in, and smell, their car – the smell of stale beer and marijuana can linger in the upholstery.

**What do you hear?** Listen to the clues the person is giving you by the things being said, the things they laugh at or the fact they may not be saying anything at all. Silence can speak volumes about something going on in the person's life. By listening, over time you will be able to identify which behaviors are the results of bad days, mood swings or something more serious. Are they slurring their word? Are they speaking low and raspy or high pitched and fast? Are they able to follow the conversation? Are they taking a long time to answer? By using all your senses along with your gut instinct, you will be able to determine certain behavior as typical or indicative of drug use.

**Other signs that may indicate drug use:**

- Stories do not add up and social circles change
- Schoolwork goes downhill
- Increased lying and stealing

**Resources:**

Urban Dictionary is an app for smart phones, tablets and computers and is useful for defining drug related words and street terms. After entering a term or word, if the word is part of the drug-jargon, the meaning will pop up within the top 3 responses and give all details about the word or terminology. <http://www.urbandictionary.com/>

EcstasyData.org is an independent laboratory pill testing program run by Erowid Center, and co-sponsored by Dancesafe and Isomer Design. Launched in July 2001, its purpose is to collect, review, manage, and publish laboratory pill testing results from a variety of organizations. <https://www.ecstasydata.org/>

Pin Point Testing - leading pioneers and industry experts in the field of Synthetic Drug detection. <https://pinpointtesting.com>

Parents Opposed to Pot: nationwide organization providing factual information about the effects marijuana has on users, families, and society. They have testimonial from parents whose children have been affected by Marijuana. Their website is <http://www.poppot.org/> Facebook: <https://www.facebook.com/poppotorg>

Moms Strong: A national group of moms who share their stories of addiction and marijuana <http://momsstrong.org/>

National Institute on Drug Abuse, the Science of Drug Abuse and Addiction. This site contains research about substance abuse and addiction. <http://www.drugabuse.gov/>

- For Curriculum about The Brain, Understanding Neurobiology through the study of Addiction <https://www.drugabuse.gov/publications/brain-understanding-neurobiology-through-study-addiction>

SAMSHA publication ordering, for free posters, brochures, handouts: <https://store.samhsa.gov/product/Tips-for-Teens-The-Truth-About-Cocaine/PHD640>

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